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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

In the Matter of

Redevelopment of Spectrum to
Encourage Innovation in the
Use of New Telecommunications
Technologies

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ET Docket No. 92-9

RM-7981

RM-8004

Comments of Cox Enterprises, Inc.

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Cox Enterprises, Inc. ("Cox"), by its attorneys, hereby submits its comments on the Commission's First Report and Order and Third Notice of Proposed Rulemaking in the above captioned proceeding.^{1/} The Third Notice requests comment on several issues critical to the development of new services in the 2 GHz band related to the status of existing 2 GHz fixed microwave licensees, including, among other things, aspects of the relocation process.

As a prospective provider of Personal Communications Services ("PCS"), Cox has a strong interest in the adoption of rules that fairly balance the interests of incumbent users of 2 GHz spectrum and the interests of proponents of Emerging Technologies. In striking a balance between the spectrum needs of existing users and the development of new services the Commission must be sensitive to both but ultimately must determine the best and highest use of its spectrum resources and implement appropriate rules that advance the Commission's determinations.

1/ FCC 92-437, released October 16, 1992 ("Third Notice"). Cox limits its comments to the new issues raised in the Third Notice.

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I. INTRODUCTION

During the last three years Cox has experimented with both fiber optic and hybrid coaxial cable/fiber optic television plant to determine what role they could play in the widespread, reliable and cost effective delivery of PCS.^{2/} Cox was the first company with cable television interests to demonstrate the technical feasibility of using cable television infrastructure to deliver PCS. Cox is continuing its PCS experiments and looks forward to providing service once the PCS rulemaking is concluded and PCS licenses are issued.

As the Commission has recognized, an important aspect of its efforts to encourage creation of new services like PCS is the result these actions will have in maintaining the United States as a world leader in the development of mobile communications products and services. Additionally, as commenters in previous filings in this proceeding have observed, establishing PCS as a viable service will create many new employment opportunities throughout the United States.^{3/}

Cox supports the Commission's efforts to fashion a compromise in this proceeding that yields clear frequencies within the 1850-1990 MHz band for the implementation of PCS. As Cox's spectrum and business analyses attest, an adequate assignment of uncongested frequencies for each PCS provider will be key to the success and growth of PCS.

^{2/} Cox holds experimental licenses to test PCS in San Diego and New York.

^{3/} See, e.g., Comments of American Personal Communications, June 8, 1992 at 2-3.

II. TRANSITION PLAN ISSUES

A. Proposed Alternatives for Voluntary Transition Are Unworkable

In making the determination to reallocate the 1850-1990 MHz band to PCS, among other potential services, the Commission took a series of steps to assure that incumbent microwave licensees are not unduly disrupted in their operations by the implementation of emerging technologies. Specifically, the Commission determined:

- 1) that all existing fixed microwave 2 GHz licensees will retain co-primary status indefinitely;
- 2) that if involuntary relocation is required, the emerging technology service provider must guarantee payment of all relocation costs and perform all the coordination and implementation work required for relocation;
- 3) that the emerging technologies service provider must build and test the new microwave system for comparability. The incumbent microwave user would not be required to relocate until the facility is available to it and adjustments are made to ensure a seamless handoff. If the new facilities prove not to be comparable in practice during the first year of operation, the emerging technologies service provider must remedy the deficiency or relocate the displaced microwave licensee back to its former frequencies.
- 4) that all existing 2 GHz fixed microwave facilities licensed to public safety and special emergency radio services will be exempt from any involuntary relocation requirements.

It is against this backdrop that the Commission seeks comment in the Third Notice on the appropriate length of a transition period for voluntary relocations. The Commission seeks comment on a number of options, including a period of three to ten years for voluntary negotiations commencing at the conclusion of the Commission's proceeding to rechannelize higher frequency bands for use by 2 GHz licensees; an additional minimum time period for

voluntary negotiations beyond the fixed time period; and the option of no transition period where services are offered pursuant to blanket licenses or are provided as unlicensed services.

In its Reply Comments filed in the PCS rulemaking, Cox submitted a study of current spectrum utilization in the 1850-1990 MHz band in the San Diego metropolitan area. The study compared the impact of alternative proposals under consideration to assign spectrum in the 1850-1990 MHz band in blocks of 20 MHz, 30 MHz or 40 MHz to PCS operators. It also compared the availability of spectrum for the development of PCS when all current microwave users remain in the band and when those microwave users who appear to be non-exempt from involuntary relocation are moved. A copy of the study is attached to these comments. The study illustrates graphically the lack of available frequencies for PCS providers to deploy their services, particularly in downtown San Diego and other high demand areas. The adverse impact on PCS development of providing interference protection to all existing microwave licensees and to those that may be exempted from involuntary relocation is obvious.

Cox's study reveals numerous critical, high demand areas that PCS providers would be blocked from providing service. These areas of blockage occur under each of the proposed block assignment scenarios and persist even after those microwave licensees that can be involuntarily relocated under the Commission's rules are relocated.^{4/} There is simply not enough underutilized

^{4/} Another study conducted by American Personal Communications and filed on November 20, 1992, found comparable or worse blocking problems in the eleven largest metropolitan areas in the United States.

spectrum in the 1850-1990 MHz band to permit PCS providers to serve critical areas within their licensed markets without significant relocation of existing users.

In light of this severe frequency constraint on the development of PCS, a three to ten year voluntary negotiation period to relocate non-exempt microwave operations is clearly unworkable for a PCS provider attempting to offer broadly available services in competition with other wireless alternatives. Such an extended period during which existing licensees cannot be moved also is inconsistent with the Commission's goal of creating additional wireless competition.

As Cox's study of the San Diego area demonstrates, a PCS licensee cannot provide service without immediate flexibility at the time it is licensed to relocate microwave licensees. A three to ten year period of required voluntary negotiations either will unreasonably delay the implementation of PCS or force PCS licensees to accept unreasonable and costly demands to obtain access to desperately needed spectrum.

Cox submits that the Commission cannot delay the relocation process for several years in the vain hope that parties will reach voluntary relocation agreements. While Cox agrees that voluntary agreements are desirable, they are not inevitable. In light of the strong protections the Commission already has fashioned for incumbent microwave users, it is unclear what public purpose would be served by maintaining a mandatory voluntary negotiation period that would only serve to delay the introduction of new services the Commission already

determined are in the public interest and will advance the U.S. position of world leadership in developing new mobile technologies.^{5/}

The Commission's comprehensive relocation rules guarantee microwave operators reimbursement for all relocation costs and assure comparable performance of their relocated operations. The Commission also has determined that, while existing microwave operators continue to operate in the 2 GHz band, they will be accorded co-primary treatment indefinitely. The Commission's original ten-year transition proposal was combined with a proposal to end co-primary status and interference protection for incumbent microwave operators after ten years. Since the Commission now has revised its rules to provide indefinite protection for incumbent microwave licensees, and has guaranteed microwave licensees that they will not be adversely affected by the implementation of new services, there is no longer a need for any transition period.

Cox agrees that microwave users should be provided adequate notice of the PCS provider's intention to relocate their facilities. PCS licensees also should be permitted to request that microwave licensees relocate within twelve months of the time of the request. No request for relocation could be made prior to the time a PCS operator is licensed to construct its system.^{6/}

5/ The Commission already has exempted from the relocation process entirely a large group of microwave users.

6/ Given the amount of time before PCS licensing rules are adopted, and applications filed and granted, Cox's proposed twelve month notification period would provide existing microwave operators with at least a three year period during which they would not be subject to requests for involuntary relocation.

B. Microwave Licensees Are Adequately Protected Under the Commission's Rules

Cox already has expressed its willingness to pay the relevant costs of microwave licensee relocation and to assure that incumbent microwave users are relocated to frequencies that permit their continued operation at comparable service levels. However, Cox is concerned that a mandatory voluntary negotiation period may stall the development of PCS.

As Cox has previously stated, it is eminently reasonable to limit reimbursement of microwave licensees to their costs of relocation, particularly if the Commission wants the public to have access to new PCS services.^{7/} Cox believes that the standards the Commission has adopted generally are appropriate standards that should be used for both voluntary and involuntary relocation requests.

III. CONCLUSION

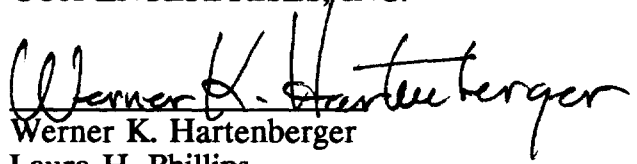
Cox recommends that the Commission permit relocation of existing microwave operations after a twelve month notification period. Such a period

^{7/} See Comments of Cox Enterprises, Inc., CC Docket No. 90-314, November 9, 1992 at 14.

provides timely and appropriate notice to the incumbent microwave operator, and permits PCS licensees to plan system expansion and development in a manner that promptly brings service to the public.

Respectfully submitted,

COX ENTERPRISES, INC.

A handwritten signature in dark ink, appearing to read "Werner K. Hartenberger", is written over the typed name.

Werner K. Hartenberger
Laura H. Phillips

Its Attorneys

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January 13, 1993



An Alliance Telecommunications Company

This spectrum sharing model has been developed to characterize the impact of the microwave environment upon PCS. Using this model, we can determine the size of interference areas around any selected microwave paths within a given MSA.

The model commences by making certain assumptions about the PCS system. For instance, since we seek to characterize the interference impact throughout a given MSA, the model assumes that a PCS system has been uniformly deployed throughout the given MSA. A uniform grid is placed over the MSA, and a PCS transmitter is assumed to be operating at each grid point. The granularity of the grid can be changed, and a resolution of 10 seconds was used for this analysis.

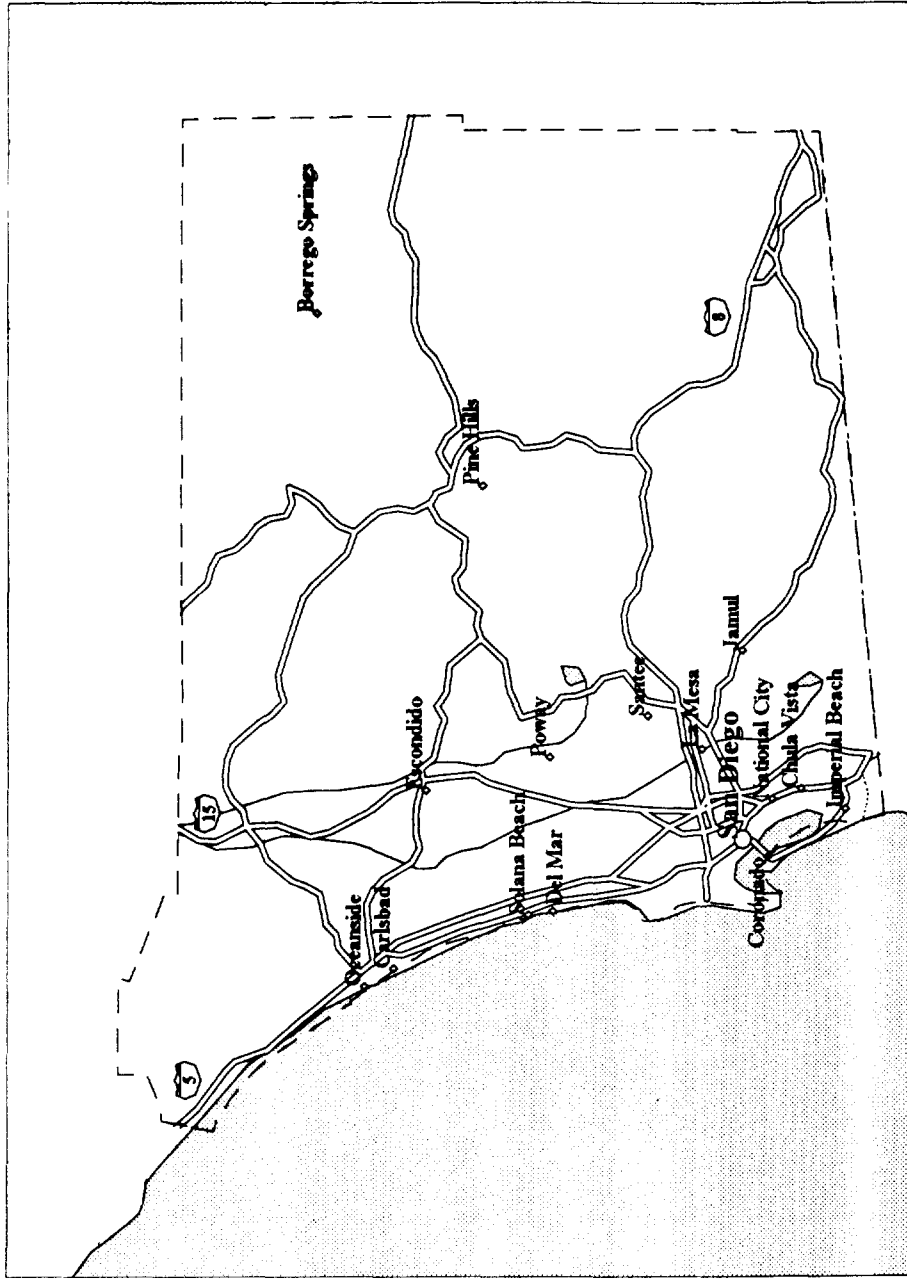
The user can select which microwave paths are to be considered in the analysis. The model then looks at each PCS transmitter and calculates the interfering signal level from this transmitter into every selected microwave receiver in the MSA. When calculating this interfering signal level, the model considers the microwave antenna pattern as well as the microwave receive filter pattern. Thus, for each grid point, the model calculates which frequencies cannot be used due to the potential to cause harmful interference into the microwave environment. The model sums the contribution from each PCS grid point into a given microwave receiver. This is the method recommended by the FCC in the PCS NPRM (92-333).

The output of the model is a plot showing the MSA and the areas where varying amounts of spectrum are unavailable. A plot can be provided for any maximum amount of available spectrum. For example, for this analysis, we have included plots for each PCS block allocation. Thus, there are plots for 20 MHz, 30 MHz, and 40 MHz maximum amounts of available spectrum.

The operating parameters of the PCS system can be changed to reflect both CDMA and TDMA systems. For the purposes of this analysis, a generic TDMA system was selected with a maximum EIRP of 30.0 dBm

To study the effect of the three PCS allocation schemes on the microwave environment, we have included plots showing spectrum availability considering all paths, as well as considering only public safety paths. Since public safety paths can remain in the band indefinitely, the plots for San Diego should provide a close estimate of the amount of available spectrum when all non public safety paths are removed. There are a total of 24 paths in the San Diego MSA, 10 of which are used for public safety operations.

The spectrum availability plots are provided in Attachments 1 - 26. Attachments 1 - 6 show spectrum availability amounts considering all microwave paths for the six spectrum blocks in the 20 MHz allocation respectively (Blocks A - F). Attachments 7 - 12 show the spectrum availability amounts considering only public safety paths for the six spectrum blocks in 20 MHz allocation respectively. Attachments 13 - 16 show spectrum availability amounts considering all microwave paths for the four spectrum blocks in the 30 MHz allocation respectively (Blocks A - D). Attachments 17 - 20 show spectrum availability amounts considering only public safety paths for the four 30 MHz spectrum blocks respectively. Attachments 21 - 23 show spectrum availability amounts considering all microwave paths for the three spectrum blocks in the 40 MHz allocation respectively (Blocks A - C). Attachments 24 - 26 show spectrum availability amounts considering only public safety paths for the three 40 MHz spectrum blocks respectively.



SAN DIEGO, CA OVERLAY

LEGEND

BLOCK A 1850-1860 1930-1940 MHz
 PCN EIRP 30 dBm
 BASE STATION HT 15 m
 PCN SUBSCRIBER HT 2 m
 CELL SIZE 1.61 km
 Dec 30 1992

COLOR LEGEND

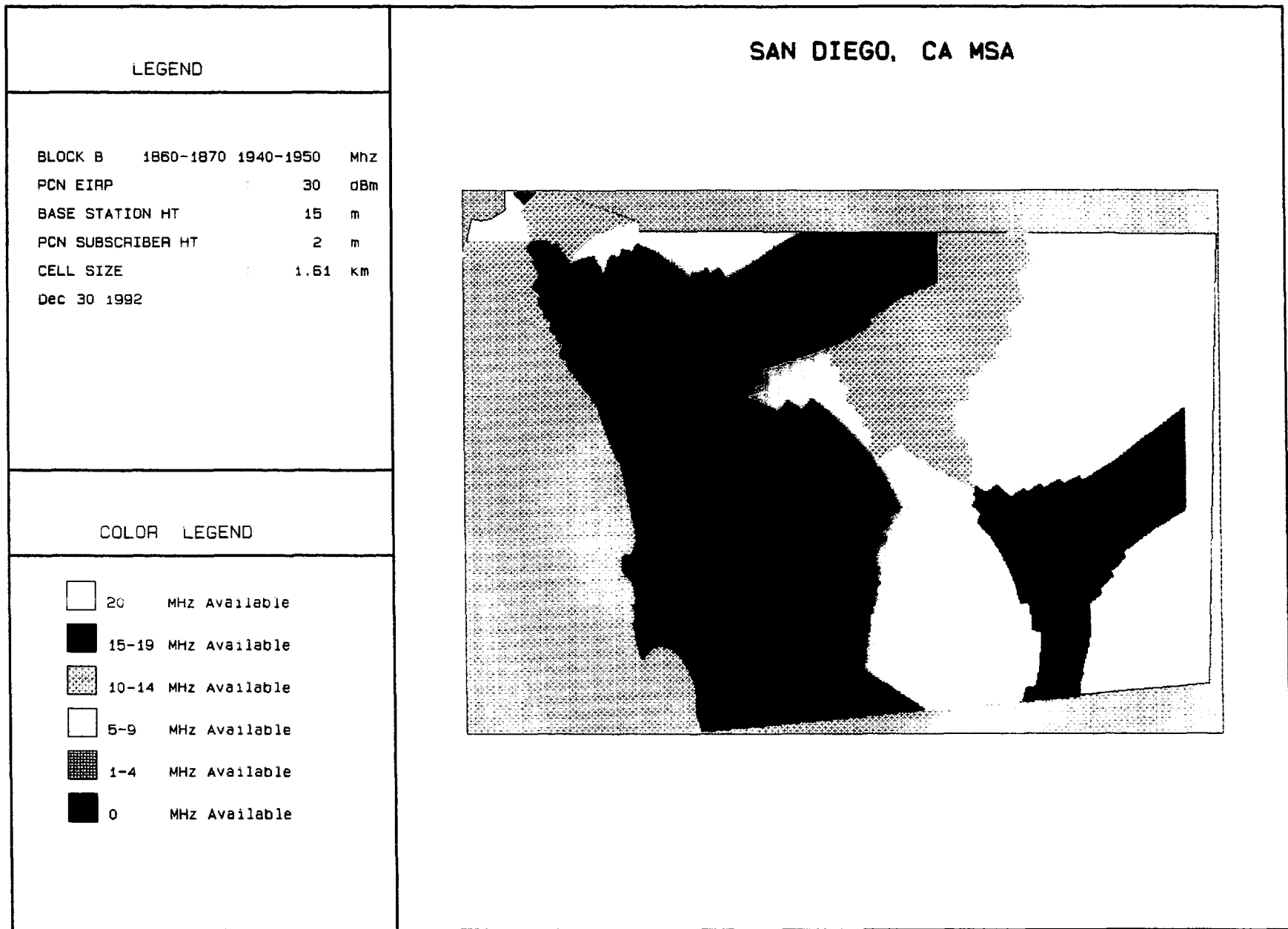
20 MHz Available
 15-19 MHz Available
 10-14 MHz Available
 5-9 MHz Available
 1-4 MHz Available
 0 MHz Available

SAN DIEGO, CA MSA

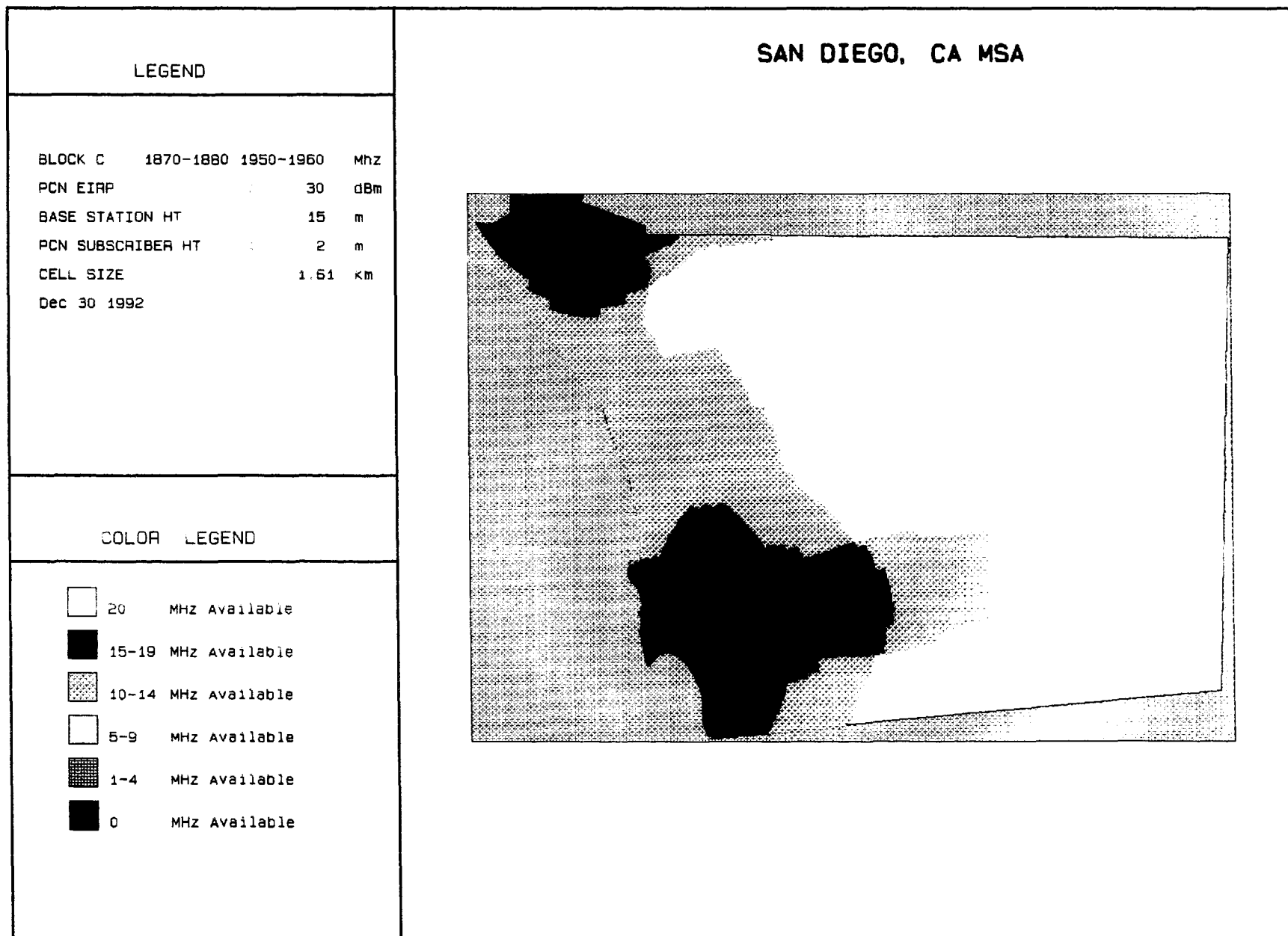


COMSEARCH

Attachment 1
 20 MHz Allocation - Block A
 All Paths

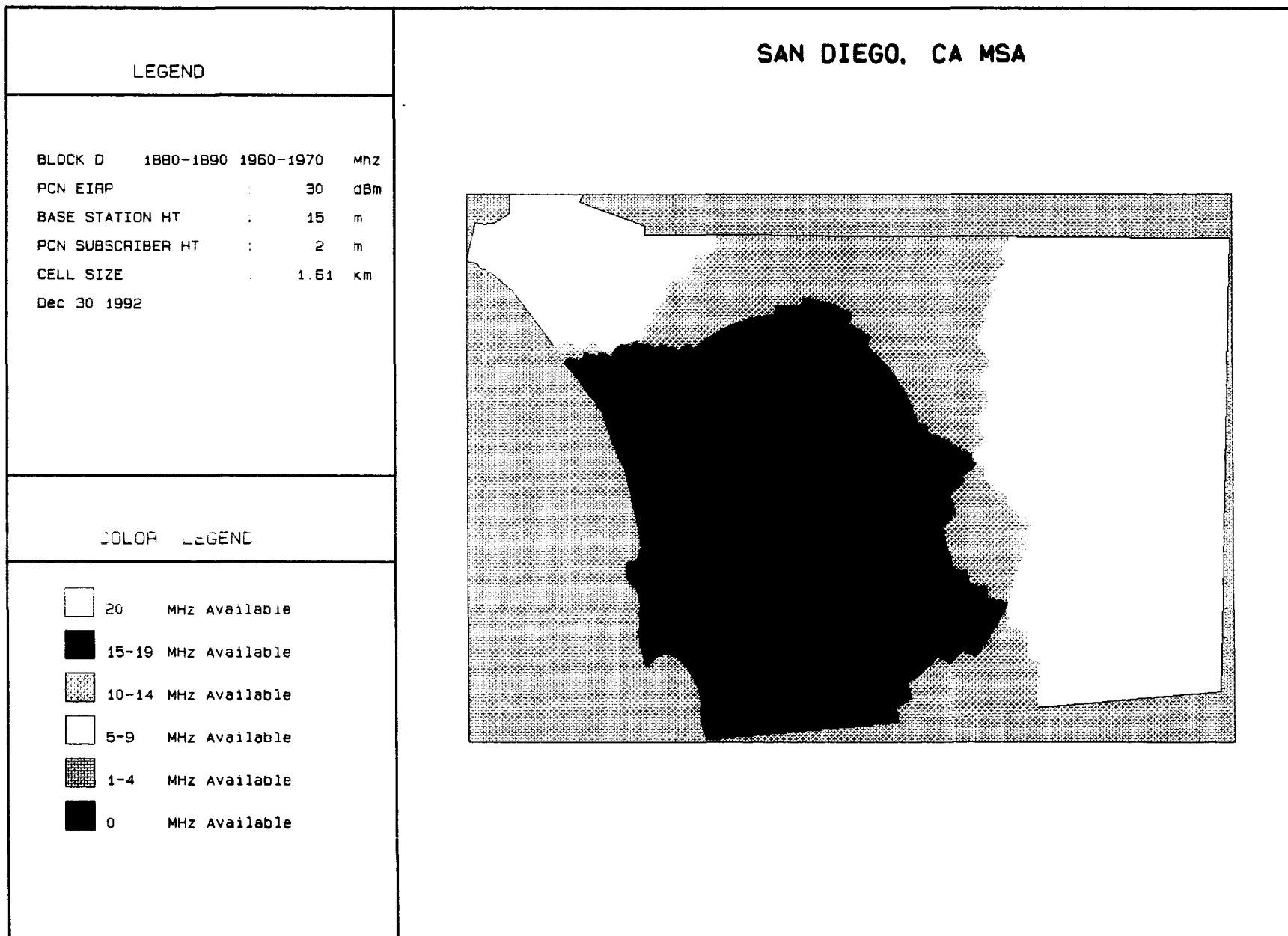


COMSEARCH



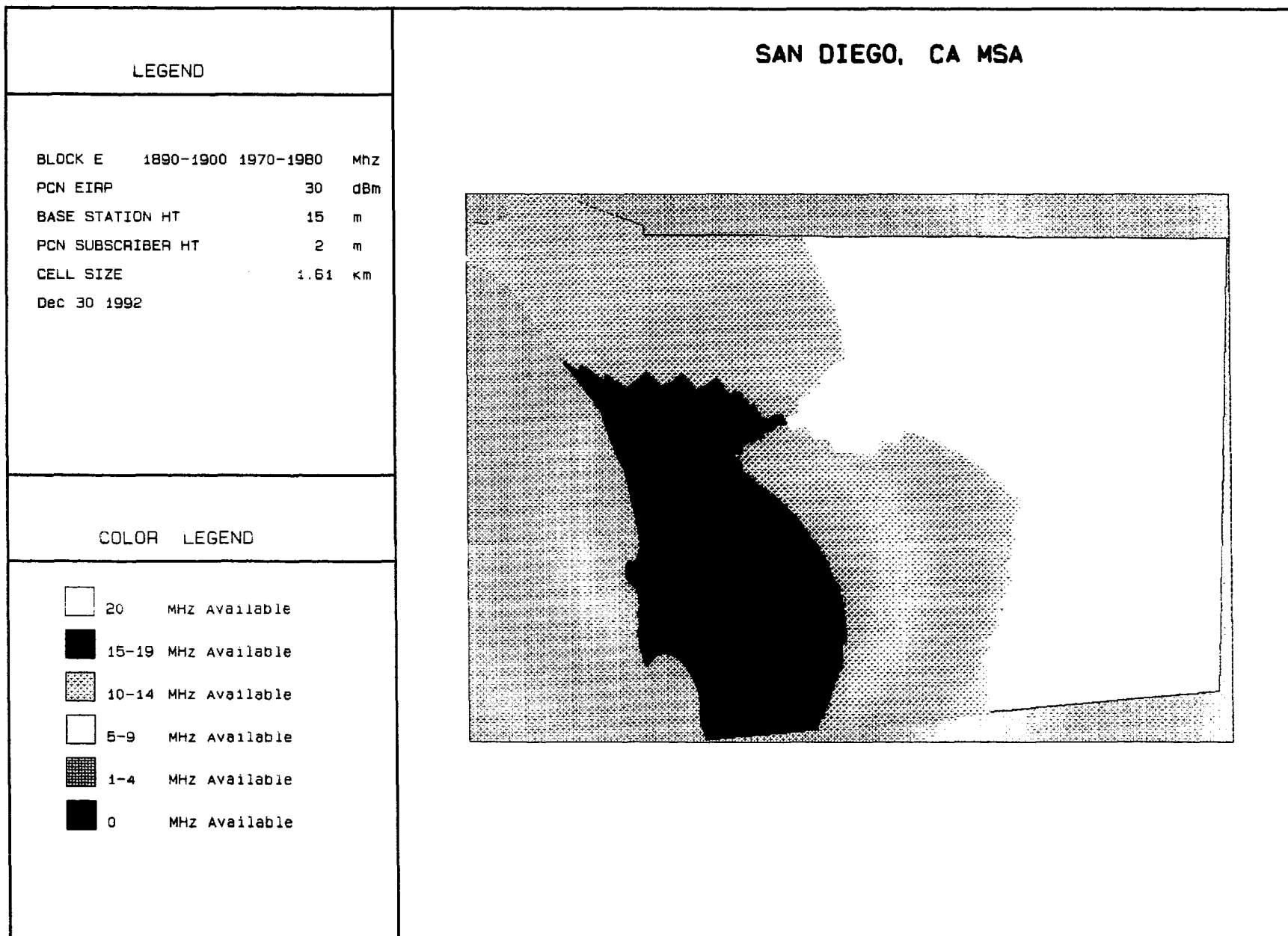
Attachment 3
 20 MHz Allocation - Block C
 All Paths

COMSEARCH



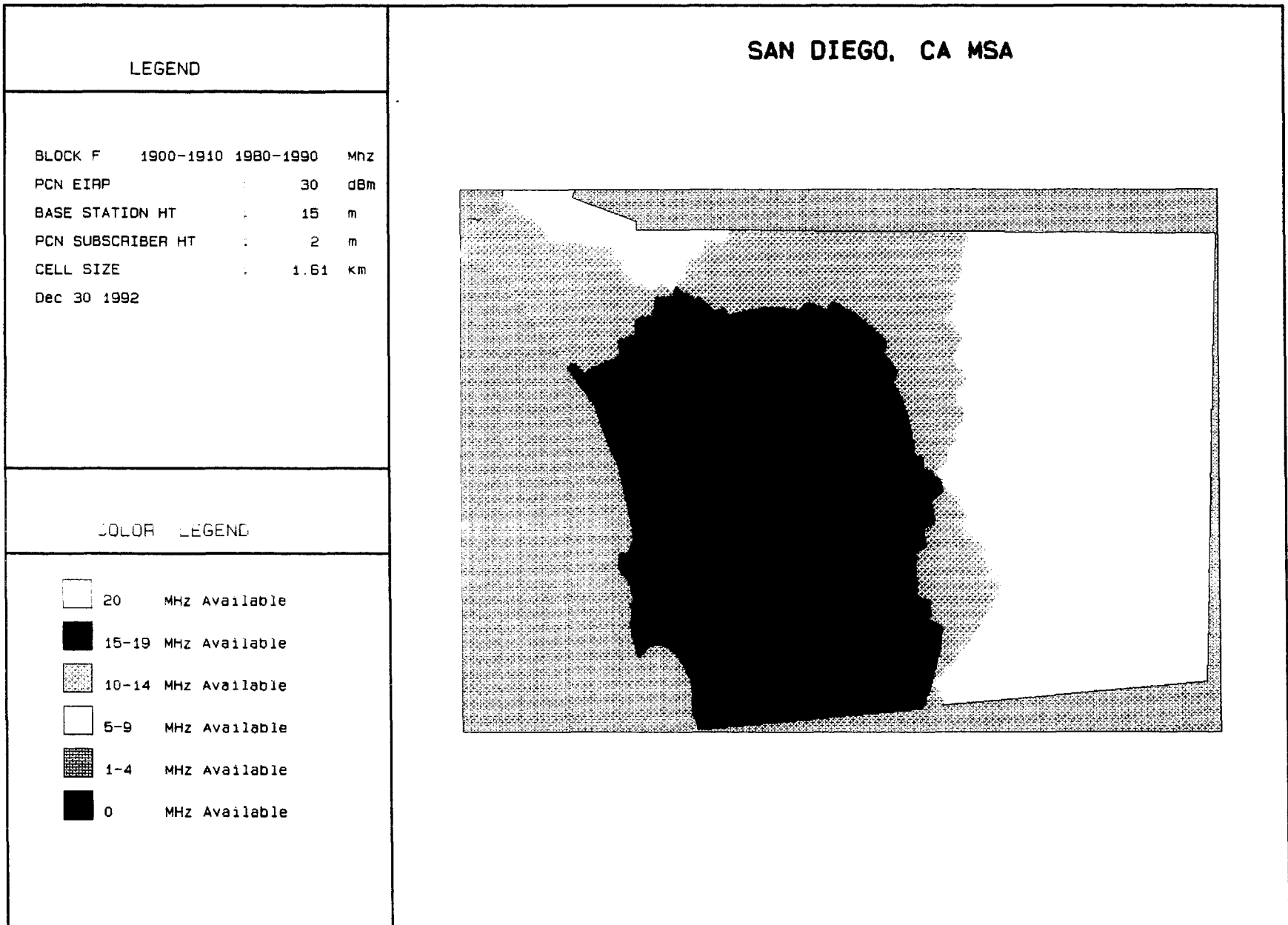
Attachment 4
20 MHz Allocation - Block D
All Paths

COMSEARCH



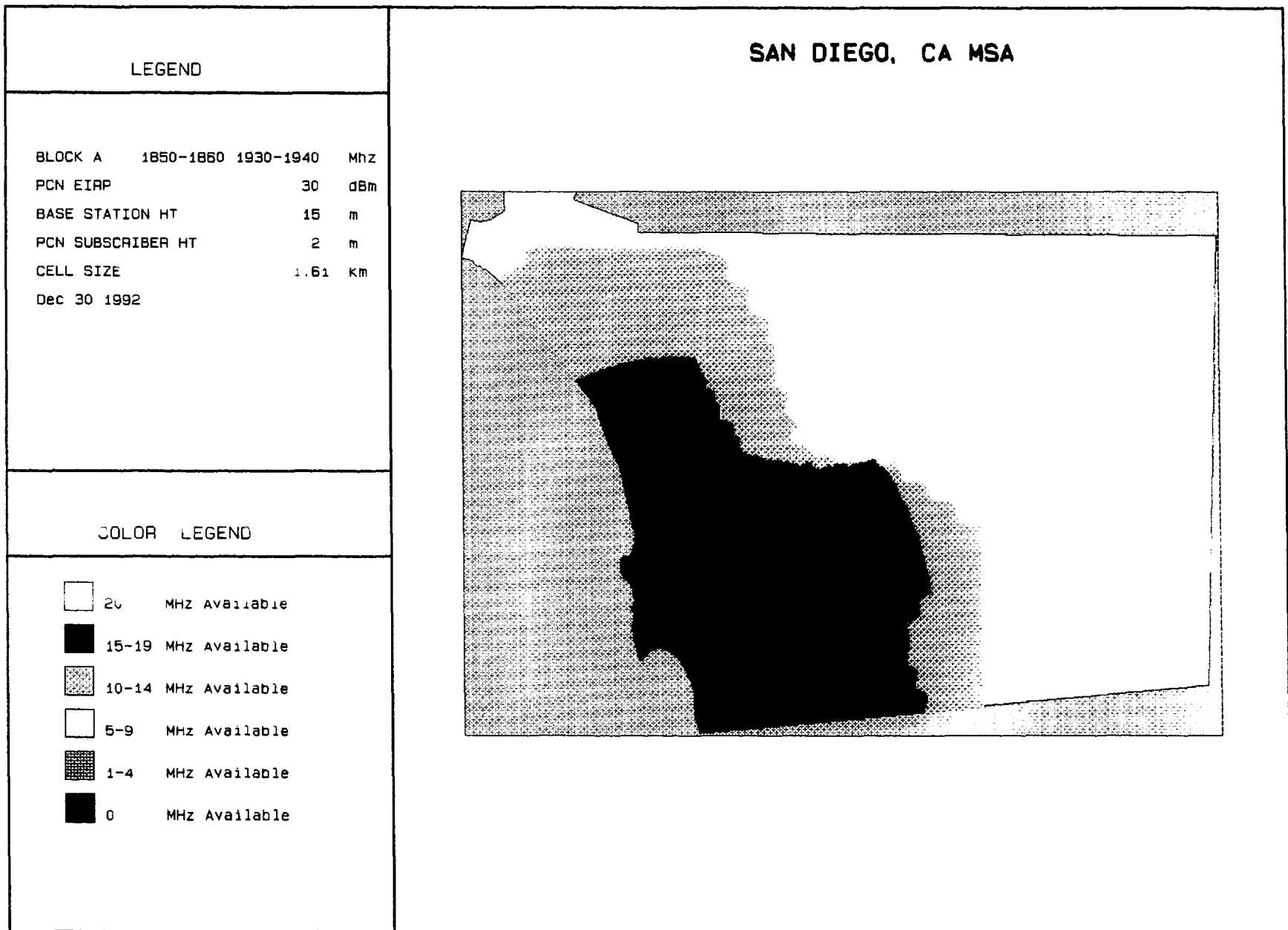
COMSEARCH

Attachment 5
20 MHz Allocation - Block E
All Paths



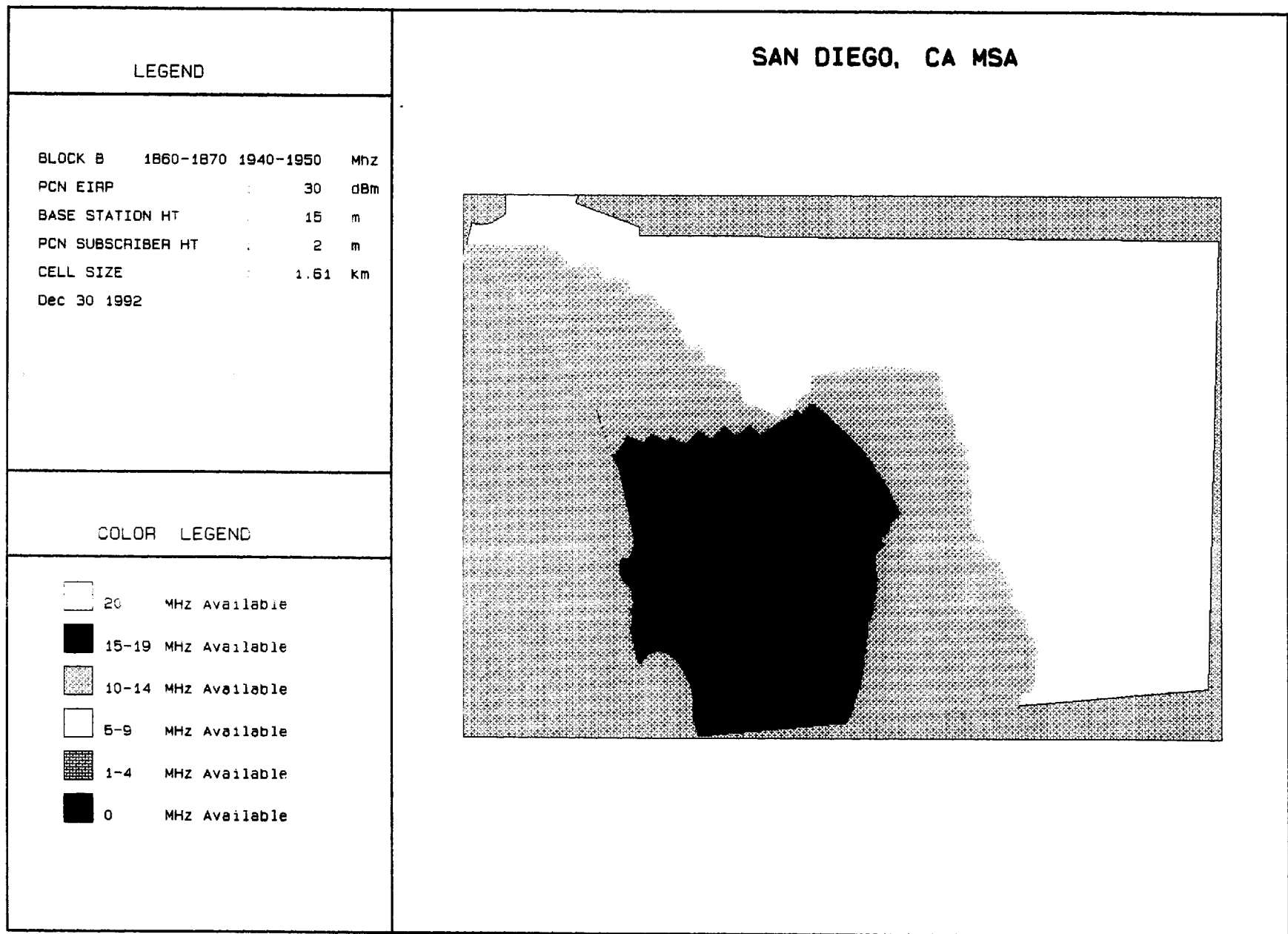
Attachment 6
20 MHz Allocation - Block F
All Paths

COMSEARCH



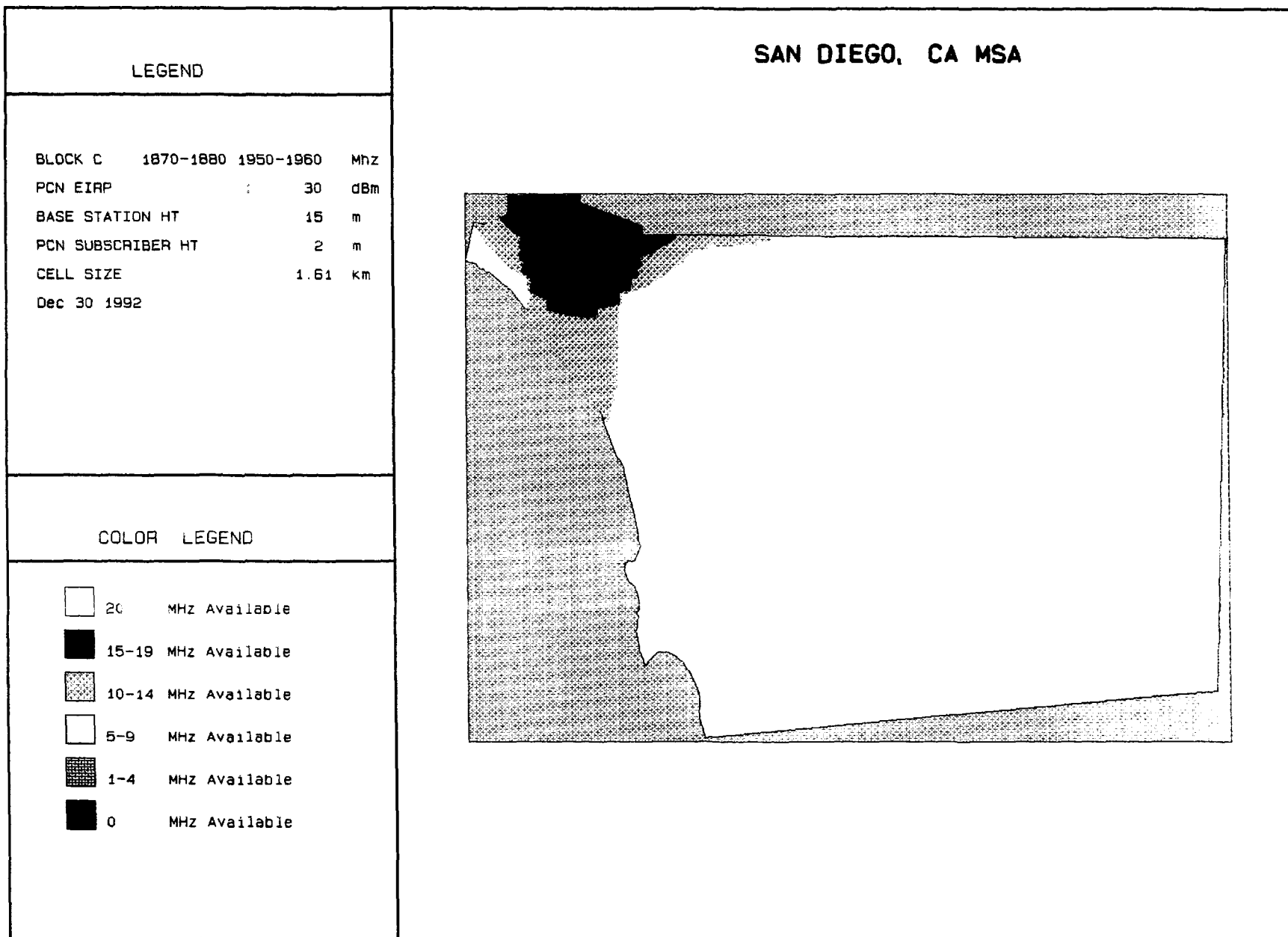
Attachment 7
20 MHz Allocation - Block A
Public Safety Paths Only

COMSEARCH



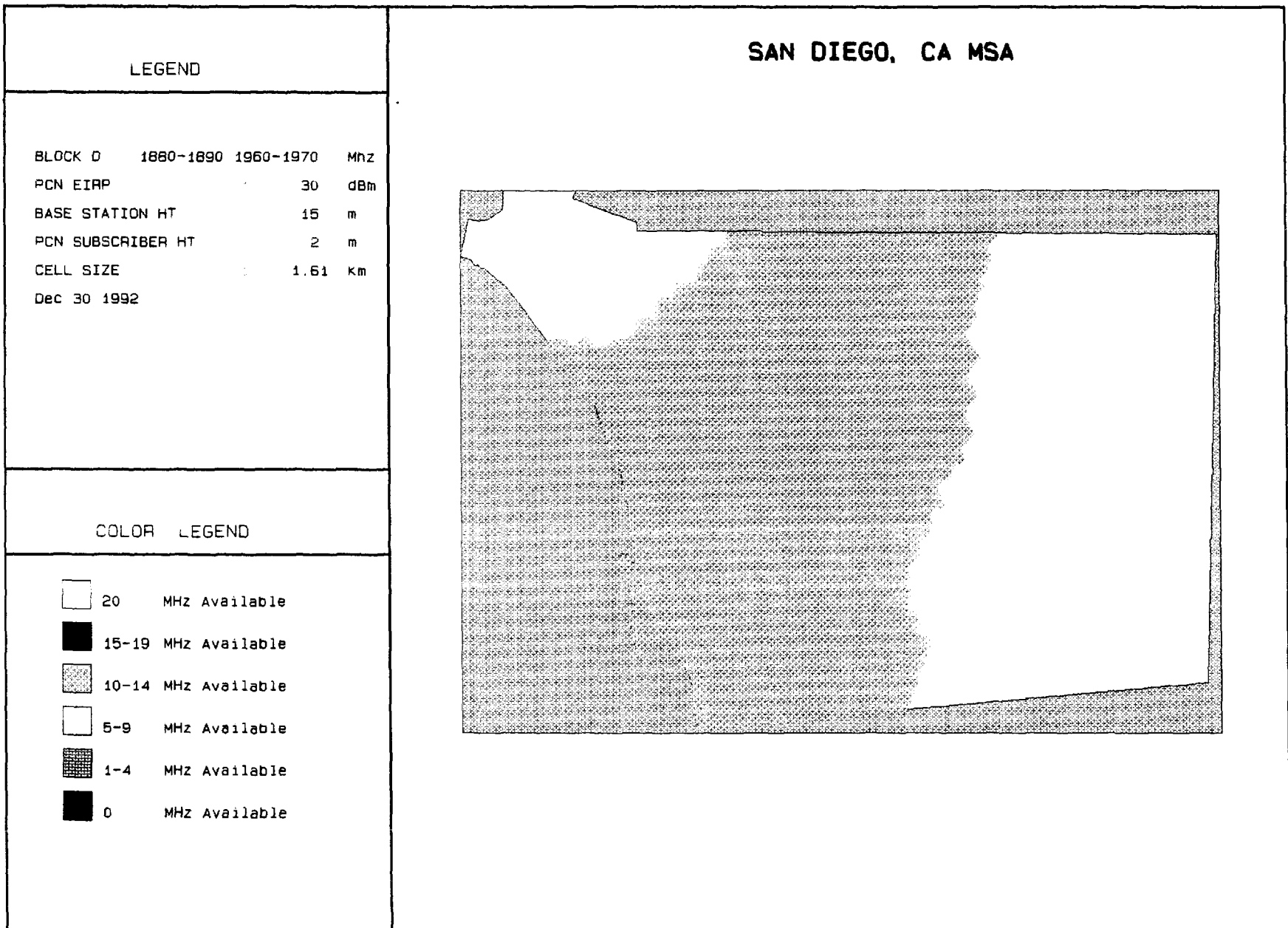
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Attachment 8
20 MHz Allocation - Block B
Public Safety Paths Only

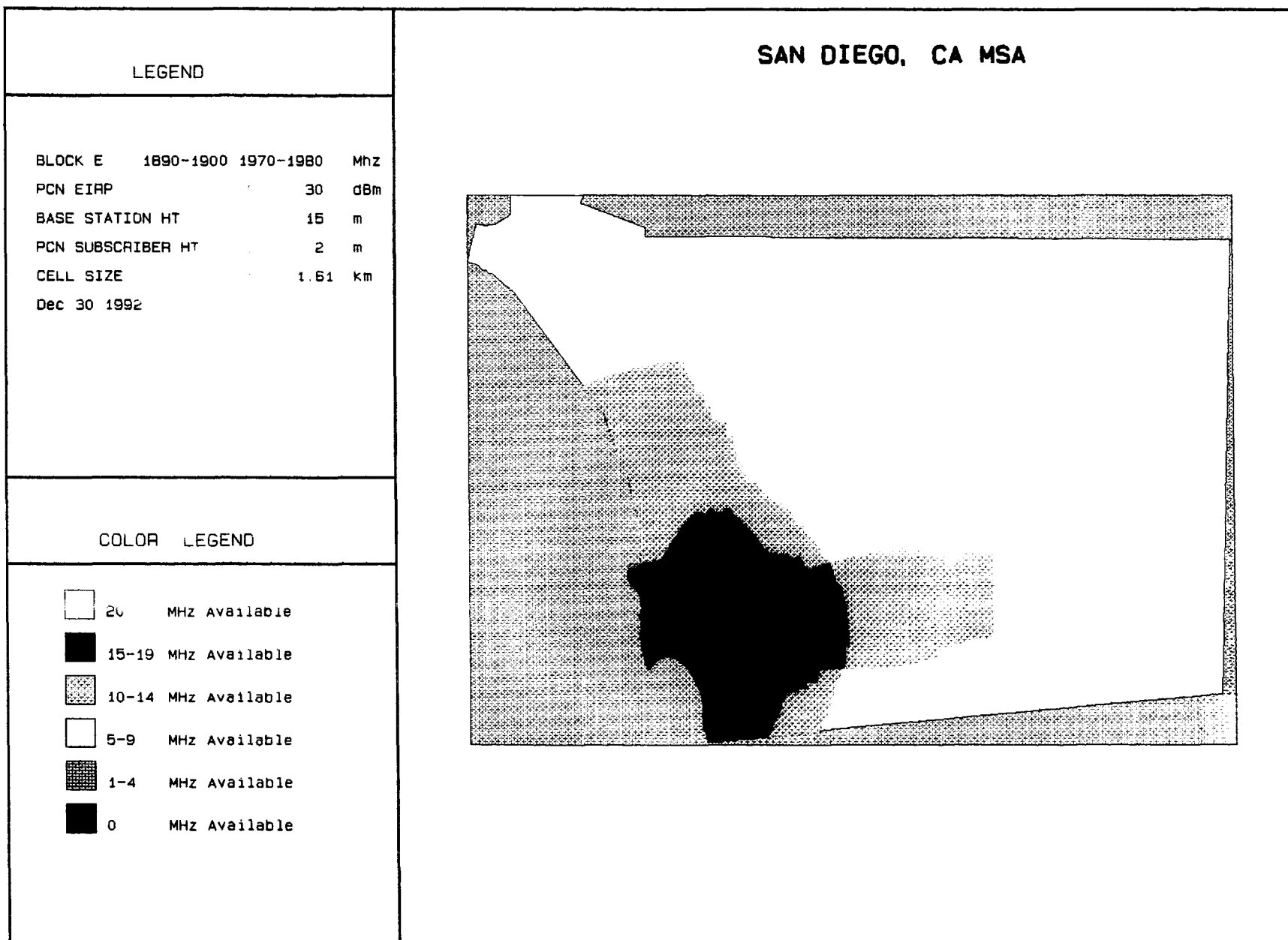


Attachment 9
20 MHz Allocation - Block C
Public Safety Paths Only

COMSEARCH

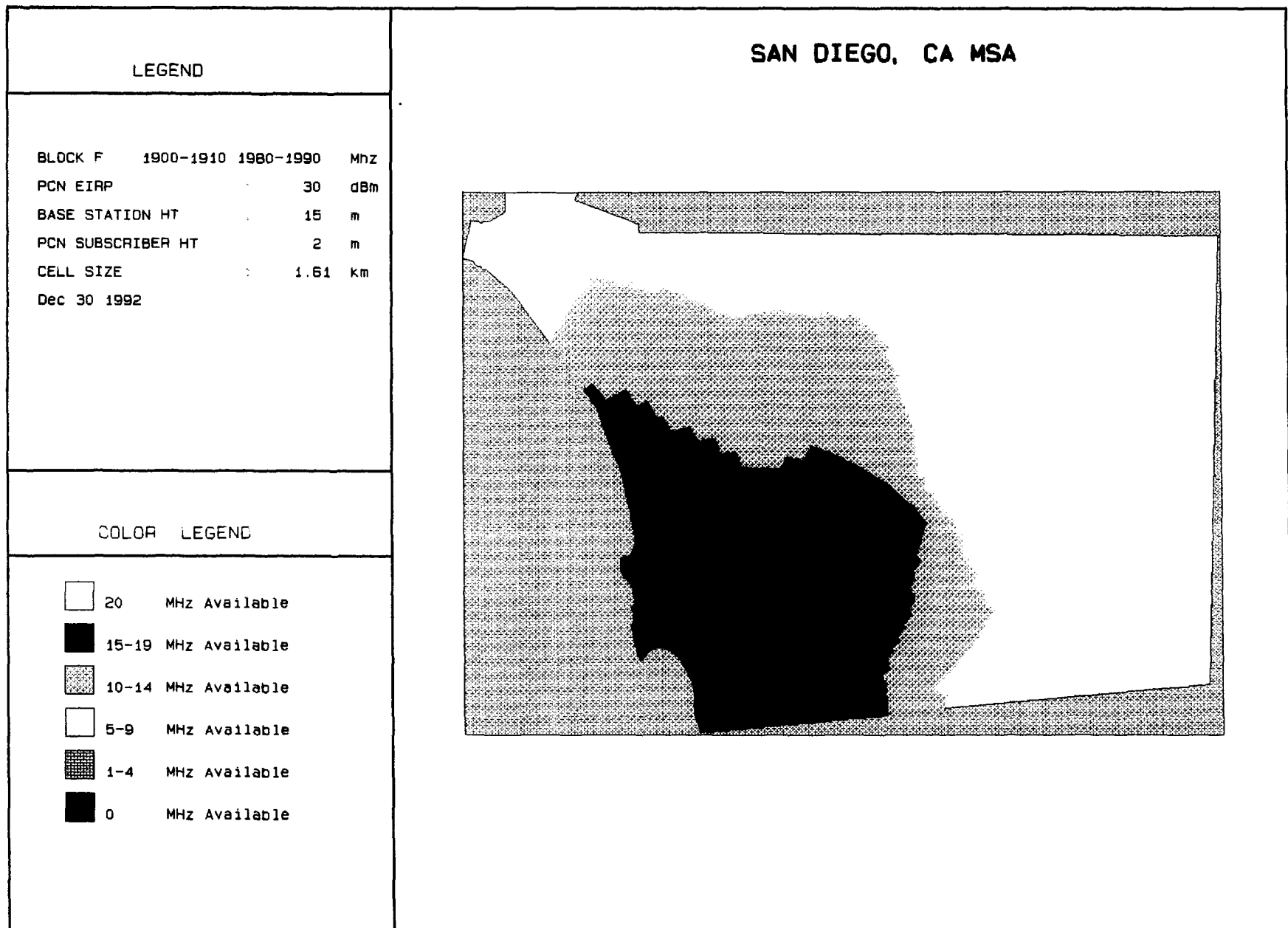


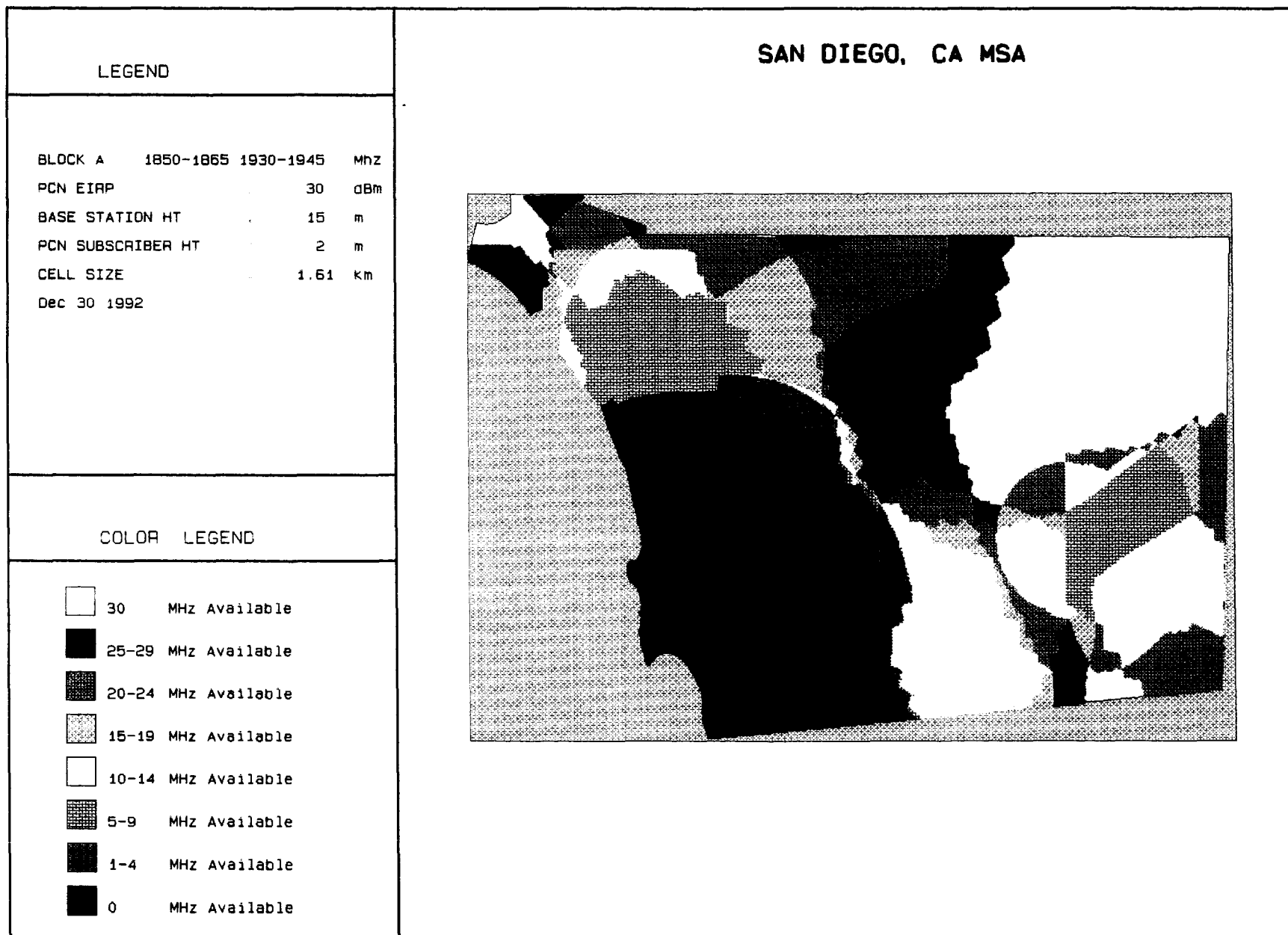
COMSEARCH



COMSEARCH

Attachment 11
20 MHz Allocation - Block E
Public Safety Paths Only













Attachment 13
30 MHz Allocation - Block A
All Paths

COMSEARCH

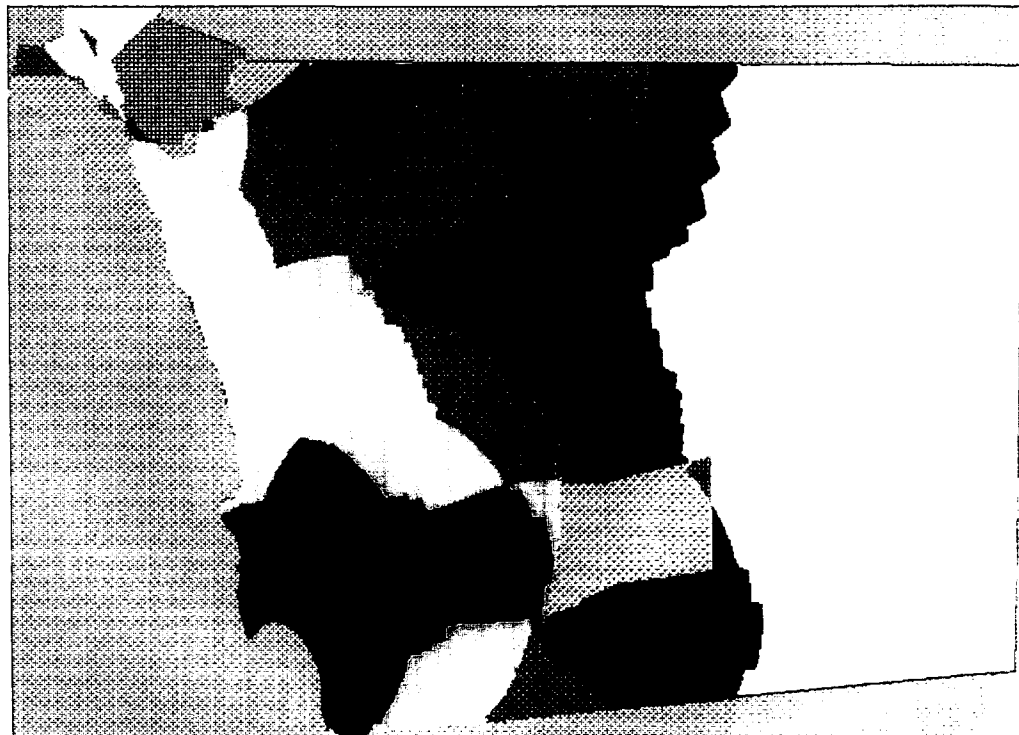
LEGEND

BLOCK B 1865-1880 1945-1960 MHz
 PCN EIRP 30 dBm
 BASE STATION HT 15 m
 PCN SUBSCRIBER HT 2 m
 CELL SIZE 1.61 km
 Dec 30 1992

COLOR LEGEND

	30 MHz Available
	25-29 MHz Available
	20-24 MHz Available
	15-19 MHz Available
	10-14 MHz Available
	5-9 MHz Available
	1-4 MHz Available
	0 MHz Available

SAN DIEGO, CA MSA











COMSEARCH

LEGEND

BLOCK C 1880-1895 1960-1975 Mhz
 PCN EIRP 30 dBm
 BASE STATION HT 15 m
 PCN SUBSCRIBER HT 2 m
 CELL SIZE 1.61 km
 Dec 30 1992

COLOR LEGEND

	30	MHz Available
	25-29	MHz Available
	20-24	MHz Available
	15-19	MHz Available
	10-14	MHz Available
	5-9	MHz Available
	1-4	MHz Available
	0	MHz Available

SAN DIEGO, CA MSA



COMSEARCH